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ABSTRACT

Research related to the importance of involving parents directly in treatment programming for childhood obesity has provided inconclusive results because of methodological problems and relatively short treatment duration periods. The effectiveness of an extended behavioral weight control program was evaluated during a 10-week treatment phase and at one- and three-month follow-ups. Three treatment conditions were compared: (1) parent only (P), where the treatment instructions were given to the parent alone; (2) child only (C), where the treatment instructions were given to the child alone; and (3) parent and child together (PC). A no-treatment control group was also assessed for 10 weeks. Although all treatment groups lost an average of at least 6 pounds over the 10-week period, there were no significant differences between the three groups in mean weight loss. There was a trend, however, for greater loss in the PC group, followed by the C group and the P group. This pattern was generally maintained at the three-month follow-up. (Author)

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TREATMENT OF OVERWEIGHT CHILDREN AS A FUNCTION OF PARENTAL INVOLVEMENT

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At least 25% of all children are obese (Brownell and Stunkard, 1978). This statistic becomes even more alarming when two additional factors are considered: 1) over 80% of overweight children become overweight adults (Abraham and Nordsieck, 1960) and 2) childhood obesity is implicated in a variety of severe physical, social and emotional problems such as diabetes, hypertension, cardiovascular disease, peer abuse, personality disturbances and negative self-concept (Brownell and Stunkard, 1978).

Despite the apparent efficacy of behavioral procedures in the treatment of adult obesity, the application and evaluation of these procedures with children have been surprisingly lacking.

The importance of involving parents directly in treatment programming for childhood obesity was first suggested by Wheeler and Hess (1976), although they presented no supporting data on actual weight loss. A subsequent study by Kingsley and Shapiro (1977) involved a parametric analysis of different levels of parental involvement in treatment. The results of this study, which consisted of an eight week therapy program did not support the notion that parental participation significantly enhanced treatment results. This failure to achieve significant results as a function of parental involvement may, however, have been due to the relatively short treatment duration, which resulted in only small amounts of weight loss (Brownell and Stunkard, 1978).

As part of an attempt to develop a community-based treatment program for childhood obesity, the present study attempted to replicate the work

of Kingsley and Shapiro (1977) in an extended treatment package. This was done with the intent of determining which components would allow us to provide our clients with the most effective treatment package.

Like many applied studies aimed at operationalizing and evaluating a program in a new treatment area, the present study met with logistical problems which resulted in incomplete group data on some measures. Implementing the treatment program brought to light a number of methodological considerations specific to overweight children. In addition to presenting the findings of the current study, this paper will discuss these methodological issues. It is our belief that these issues should be considered by and will prove to be useful to anyone interested in doing future research in the area of childhood obesity.

METHOD

Subjects

Subjects were 26 children, ranging in age from 7 to 13, with a mean age of 9.7 years. The 5 boys and 21 girls were either referred by their family physicians or were brought in by parents who learned about the program through T.V., radio, and newspaper publicity. Prior to treatment the mean weight of subjects was 111.6 lbs.

Subjects were randomly assigned to one of 4 individual conditions. Children in the "child only" (C) group met with the therapist without having a parent present. In this condition all materials and instructions were given directly to the child, and it was his responsibility to see that they reached the parent. In a second condition, "parent only" (P), the

child's only contact with the therapist was at assessment periods and weekly weigh-ins. In this group, only the parents met with the therapist to receive materials and instructions. Children in a third treatment group, "parent-child" (PC) were seen conjointly with their parents during the weekly meetings. For all treatment groups the materials and instructions were identical, and in all cases the emphasis of instruction was on enabling the child to lose weight. A fourth group of "waiting list" (WL) children was assessed at the beginning and end of a 10-week period during which they had no contact with therapists. These subjects were offered treatment after the 10-week waiting list period. There were only 5 of these no treatment controls after 2 failed to return for 10 week assessments. In the treatment groups 3 of 9 dropped out of the child only (C) group, 0 of 8 dropped out of the parent only (P) group and 1 of 8 dropped out of the parent-child (PC) group. Drop-outs generally explained their decision to quit the program in terms of family crises or other problems external to the program itself. It is noteworthy, however, that for the child only (C) group, which had the highest rate of dropouts, 2 of the 3 subjects who dropped out were also the 2 heaviest children in the entire program.

Procedure

The treatment program consisted of ten weekly meetings of approximately one hour each, and was based on a number of techniques proven effective in adult weight loss programs. Components of the package included: attention to stimulus control, self-monitoring, education in nutrition, implementation

of a diet plan based on calories (1200/day) and food group balance, contracting for parental reinforcement, introduction to aerobic exercise and modification of inappropriate cognitions. In each case materials and assignments were adapted to the child's level as necessary.

A $25 deposit, which was completely refunded, if all sessions were attended, was required for all subjects. Refunds were made for each session attended on an equally prorated basis.

After completing the 10 week program children were seen for follow-up visits 1 month and 3 months after the week 10 meeting. The follow-up sessions combined assessment with a review of treatment goals, a "pep talk", and an offer to answer questions or review old materials. Two "booster session" phone calls were spaced between the 10 week - 1 month and 1 month - 3 month intervals.

Therapy during treatment and follow-up was conducted by 3 male-female teams of advanced clinical psychology graduate students who were familiar with behavioral weight control procedures either from conducting groups or participating in training sessions. Therapists were randomly assigned to subjects and each child saw one member of the male-female team for sessions 1 through 5 and the other member for sessions 6 through 10. Each therapist in a team thus had equal exposure to subjects for each treatment condition.

RESULTS

The pretreatment group mean weights were not significantly different for all four groups ($F(3,22) = 1.52$, $p = .236$). The pretreatment group means were as follows: 1) Parent only (P) group, 109.1 lbs. (SD = 27.4);

2) Child only (C) group 129.0 lbs. (SD = 32.0); 3) Parent child (PC) group 115.3 lbs. (SD = 21.3) and 4) Waiting list (WL) group 89.3 lbs. (SD = 45.5).

Differences between treatment groups for amount of weight lost from pre- to post- (lo wk.) periods revealed no significant interaction ($F(2,18) = .1$, $p = .903$), although there was a trend for mean weight loss to be greatest in the PC condition (loss of 7.2 lbs.) than in the C condition (loss of 6.3 lbs.) than in the P condition (loss of 6.0 lbs.). This general relationship was maintained at 3-month follow-up (allowing for missing observations as noted in Figure 1).

As is typical of much of the data reported in the obesity literature there was great within group variability in the subjects' pretreatment wieghts, with an overall range of 52.0 lbs. to 183.0 lbs. There was also a great range of weight loss during the 10 week program for the three treatment conditions, with all subjects except one (who gained 1.5 lbs.) losing weight. Weight loss during the 10 week treatment program ranged from 0.5 lbs. to 17.5 lbs. All subjects except one in the WL control group gained weight during the 10 weeks in which they were observed (weight gains ranged from 0.5 to 3.7 lbs.).

Differences in weight change between the treatment groups and the control group from pre- to post- (10 week) periods demonstrated a significant interaction, wherein the control group did not decrease in weight but all treatment groups decreased in weight to the same relative extent ($F(3,22) = 3.54$, $p = .031$).

Measures of mean weight change for all subject groups are presented in Figure 1.

Insert Figure 1 about here

A test of the differences in weight change for the experimental treatment groups over the entire 22 week period revealed that: 1) all treatments affected weight change to the same extent over all the time periods ($F(6,50) = .39$, $p = .87$) and 2) there were significant changes in weight across the sour time periods regardless of treatment ($F(3,50) = 14.39$, $p < .001$). A Duncan's Multiple Range Test revealed that significant decreases in weight occurred from the pretreatment period through the 1 month follow-up, but at the 3 month follow-up the weight of the children had nearly returned to pretreatment levels.

Within each treatment group during the 10 week program at least one subject lost a minimum of 10 lbs. -- 2 in the P group (17.5 & 14.0 lbs., respectively); 2 in the C group (13.8 & 11.5 lbs., respectively); and 1 in the PC group (14.5 lbs.). In contrast however, a greater percentage of PC subjects lost 5 lbs. or more during the 10 week program than did subjects in the other 2 treatment groups: 86% (PC) versus 50% (C) and 25% (P). This picture of more significance and uniform weight loss for the PC group continued through the 3 month follow-up, at which time 80% of those reporting for the PC group had not shown any absolute weight gain (compared with pretreatment levels) versus 66.7% for the C group and 57.1% for the P group. These percentages are presented in Table 1.

Insert Table 1 about here

DISCUSSION

It appears that the present findings are largely in agreement with those of Kingsley and Shapiro (1977), who found no significant mean weight loss differences between the three treatment group (versus a waiting list

control group which gained slightly). In spite of these findings of no difference between treatment groups there was, however, a similar trend in the present data as in the Kingsley and Shapiro (1977) data: the PC group had consistently greater mean weight loss at the 10 week, 1 month and 3 month sessions than the C group, which in turn was slightly superior to the P group. The present data at the 1 month and 3 month follow-up sessions should be interpreted somewhat cautiously because of several missing data points (see note in Figure 1). In summary, despite some limitations in the present data, the findings are generally in agreement with those of Kingley and Shapiro (1977) and suggest the strategy of seeing parent and child together for greatest clinical efficacy in childhood weight reduction programs. Accordingly, the present authors are now engaged in a second study which compares treatment of parent and child individually versus parent and child in a group format.

By way of concluding remarks, several logistical and methodological problems about research in the area of childhood obesity should be addressed. In addition, practical recommendations will be provided.

A primary consideration for research in this area concerns recruitment of subjects. Although recruitment via the media is not a problem per se, difficulty arises in trying to classify children according to percent overweight, and assign them to treatment groups. An initial goal of this project had been to treat children who were "high-risk candidates" for obesity. This target population was operationally defined as 15% to 30% overweight, but it becomes apparent that reliable criteria for such

classifications were not available. Existing growth standards tables (e.g., Falkner, 1962) appear to be outdated and of little practical value in determining percent overweight for children. The range of individual growth differences appears to be great for children and practical limitations (e.g., computing percent overweight for height and weight, given a certain age) abound. Having no reliable criteria for selecting and assigning subjects, we adopted a policy of selecting and randomly assigning all children who were referred and received their physician's consent to participate. The resulting pretreatment group differences and extreme intersubject variability were clearly a hinderance in final evaluation of the program. A possible solution to this dilemma would be to compute expected growth changes for height and weight versus actual growth during the treatment program (Brownell, personal communication, 1980) but even this strategy is dependent on the existing growth standards tables.

A related issue is the need for reliable measures other than absolute weight change to assess the effectiveness of weight reduction in children. Recent literature (Franzini and Grimes, 1976) has pointed to the need for dependent measures other than those calculated for weight (e.g., absolute weight, change in weight, and percent overweight) to be used in the study of obesity. Skinfold thickness, measured with skinfold calipers, appeared to be both a practical and useful measure which would allow a better approximation of percentage of body fat than weight alone. Our attempts to use this measure in the present study proved to be somewhat problematic. Although the experimenters were able to achieve an acceptable level of

inter-rater reliability during training (with non-obese adults), measurements taken during actual treatment (with obese children) did not reach the same level of inter- or intra-rater reliability. As noted in Johnson and Stalanos (1977), it becomes difficult to locate the same measurement site at different assessment sessions. Considering the length of time between assessments, it becomes impractical to mask the site as they suggest. With heavier children, the calipers tended to slip, which made it difficult to obtain an accurate measurement. Cautionary steps which make this measure more accurate can be found in Johnson and Stalanos (1977). It was noted by the present authors that these precautions take away from the practicality of the measure, and therefore we believe that the search for alternative measures should continue. Unfortunately, no better, readily available measure seems presently at hand.

In the way of treatment recommendations, it is suggested that periodic exercise assessment and self-concept assessment be included for all subjects in childhood obesity studies. Although a systematic exercise program was included in the present treatment package and periodic exercise assessment was also included, exercise assessment measures were not standardized adequately enough to be included here. Anecdotal impressions were that weight loss was positively correlated with both increased speed and stamina during exercise assessment. For the few subjects on whom self-concept data were complete in the present study, results were somewhat difficult to interpret. Although it appeared that there was generally a significant increase in self-concept score as a function of significant weight loss at

the 3 month follow-up period, some subjects who gained significantly had higher self-concept scores, and in a couple of cases lower self-concept scores at 3 month follow-up. There may also have been the tendency to endorse a positive response set with repeated measures, which would have obviously obscured any reliable treatment effects. Because of the possible side effects of negative treatment results it is imperative that future studies systematically investigate self-concept data using a variety of measures. One other anecdotal observation in the present study was the extent to which the child's participation often seemed to motivate parents and occasionally siblings to begin dieting. Kingsley and Shapiro (1977) noted a significantly greater weight loss for mothers in their "mother only" condition than for mothers whose children were in other treatment conditions. In addition to the above considerations an important area for future research in the area of childhood obesity would be to systematically assess the effect of the weight reduction program on the child's parents and siblings.

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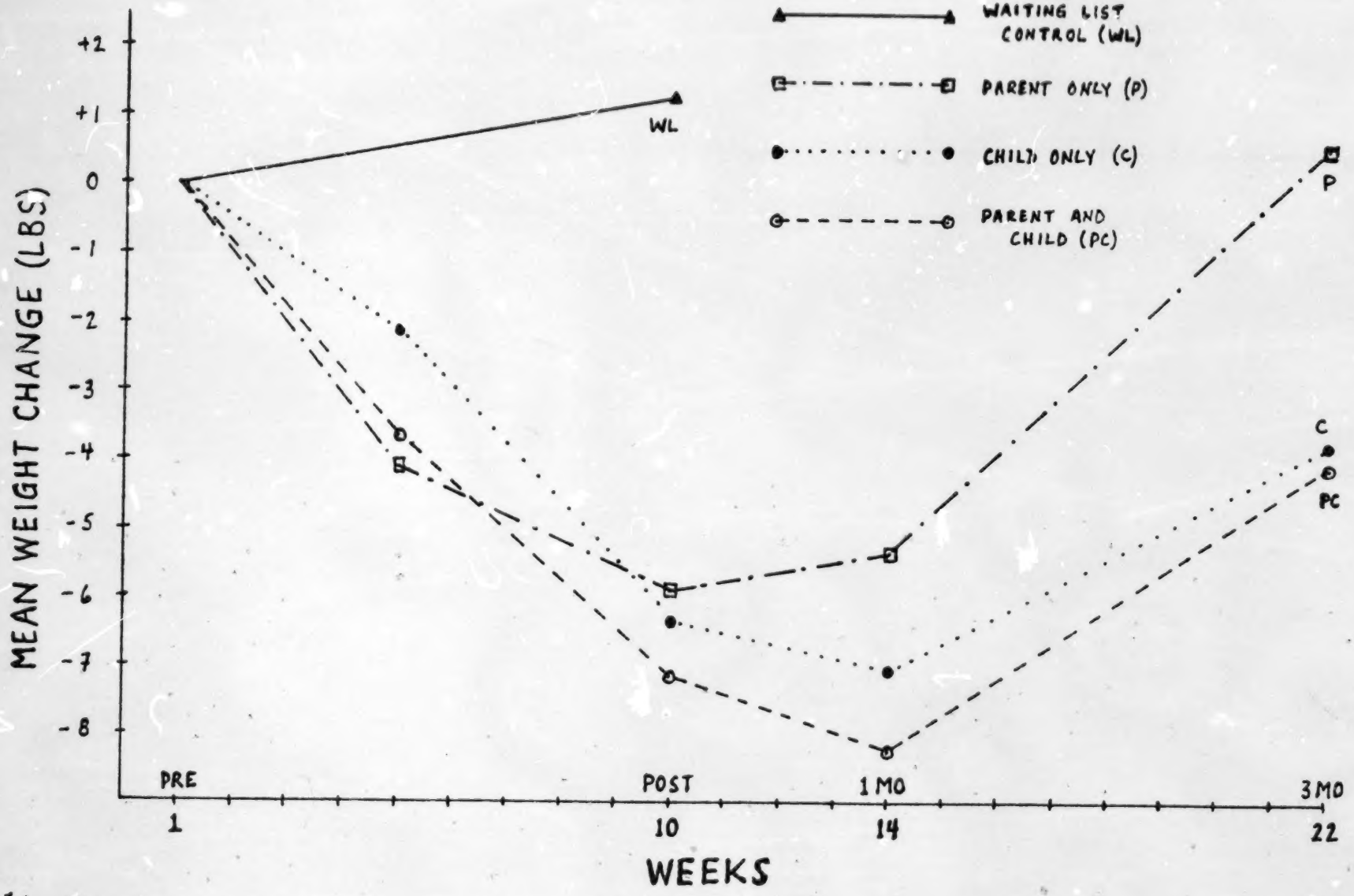
Table 1. Percentages of subjects losing over 10 lbs., 5-10 lbs., 0-5 lbs. and gaining 0-5 lbs. or over 5 lbs. at ten week (post-treatment) and three-month follow-up (Treatment groups are: Parent only, Child only and Parent-child).

	Lost over 10 lbs.	Lost 5-10 lbs.	Lost 0-5 lbs.	Gained 0-5 lbs.	Gained over 5 lbs.
Ten weeks					
Parent only	25.6%	0%	75.0%	0%	0%
Child only	33.3%	16.7%	33.3%	16.7%	0%
Parent-child	14.3%	71.4%	14.3%	0%	0%
Three month follow-up					
Parent only[1]	14.3%	0%	57.1%	14.3%	14.3%
Child only	33.3%	16.7%	16.7%	16.7%	16.7%
Parent-child[1]	0%	0%	83.3%	16.7%	0%

[1]NOTE: Three month follow-up percentages are based on one less observation for Parent only and Parent-child groups, relative to ten weeks observations (due to missing values).

Figure Caption

Figure 1. Mean group weight changes as a function of treatment condition during a weight reduction program for children (WL = waiting list control group; P = parent only; C = child only; PC = parent-child, Note: there is one less observation in the PC group at 1-month follow-up, and in the P and PC groups at 3-month follow-up, than pre-treatment).


WAITING LIST CONTROL (WL)
PARENT ONLY (P)
CHILD ONLY (C)
PARENT AND CHILD (PC)
MEAN WEIGHT CHANGE (LBS)
+2
+1
0
-1
-2
-3
-4
-5
-6
-7
-8
WL
P
C
PC
PRE
POST
1 MO
3 MO
1
10
14
22
WEEKS